

Patent Claims:

- 5 1. A device for monitoring an electrolytic process, comprising at least one anode and at least one cathode, at least one reference electrode being disposed at the surface of the at least one anode or at the surface of the at least one cathode, at least one voltmeter being respectively provided for detecting the electric voltages between the at least one anode and
10 the at least one reference electrode and between the at least one reference electrode and the at least one cathode.
- 15 2. The device according to claim 1, **wherein** at least one first reference electrode is disposed at the surface of the at least one anode and at least one second reference electrode is disposed at the surface of the at
20 least one cathode and wherein a voltmeter is respectively provided for detecting the electric voltages between the at least one anode and the at least one first reference electrode, between the at least one first and the at least one second reference electrode and between the at least one second reference electrode and the at least one cathode.
- 25 3. The device according to one of the afore mentioned claims, **wherein** the at least one reference electrode communicates through capillaries with the surface of the at least one anode or with the surface of the at least one cathode.
- 30 4. The device according to claim 3, **wherein** means are provided by means of which electrolyte fluid is deliverable through the capillaries to the at least one reference electrode.
5. The device according to one of the afore mentioned claims, **wherein** the at least one anode and the at least one cathode are paralleled and

oriented horizontally or tilted from horizontal.

5 6. The device according to one of the afore mentioned claims, **wherein** the cathode is a wafer or a chip carrier substrate and the anode is a metal plate.

10 7. A method of monitoring an electrolytic process in an electrolytic cell comprised of at least one anode and of at least one cathode, at least one reference electrode being disposed at the surface of the at least one anode or at the surface of the at least one cathode, at least one voltmeter being respectively provided for detecting the electric voltages between the at least one anode and the at least one reference electrode and between the at least one reference electrode and the at least one cathode,

15 said method involving the following method steps:

- a) providing an electric current flow between the at least one anode and the at least one cathode,
 - b) concurrently detecting the respective electric voltages between the at least one anode and the at least one reference electrode and between the at least one reference electrode and the at least one cathode.
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25 8. The method of claim 7, **wherein** at least one first reference electrode, which is disposed at the surface of the at least one anode and at least one second reference electrode, which is disposed at the surface of the at least one cathode are provided,

method step b) including the following partial method steps:

- b1) detecting the electric voltage between the at least one anode and the at least one first reference electrode,
 - b2) detecting the electric voltage between the at least one first reference electrode and the at least one second reference electrode and
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- b3) detecting the electric voltage between the at least one second reference electrode and the at least one cathode.

5 9. The method according to one of the claims 7 and 8, **wherein** the at least one reference electrode is brought into contact with the surface of the at least one anode or with the surface of the at least one cathode by way of capillaries.

10 10. The method according to claim 9, **wherein** electrolyte fluid is delivered through the capillaries to the at least one reference electrode.

15 11. The method according to one of the claims 7 - 10, **wherein** the at least one anode and the at least one cathode are paralleled and oriented horizontally or tilted from horizontal.

12. The method according to one of the claims 7 - 11, **wherein** the cathode is a wafer or a chip carrier substrate and wherein the anode is a metal plate and wherein the metal is electrolytically deposited on the wafer.